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USAWC STRATEGIC RESEARCH PAPER

ARMY NATIONAL GUARD  
AIR DEFENSE ARTILLERY MODERNIZATION

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A VISION FOR THE FUTURE

by

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## ABSTRACT

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Proposed force reductions and the evolution of a new National Military Strategy (NMS) mandate an even more vital role for the Reserve Components in this nation's defense. Studies have proven that one branch where the Reserve Components can make a valuable contribution is Air Defense Artillery. All Reserve Component Air Defense Artillery forces are currently organic to the Army National Guard. To remain a viable part of the Total Force, these organizations must be assigned realistic missions and manned, trained, equipped, and resourced commensurate with mission requirements. In view of the evolving threat and proposed force structure reductions, this study provides a concept for modernizing Army National Guard Air Defense Artillery organizations to enable them to effectively perform their critical wartime force protection role. Although designed primarily to focus on resourcing warfighting requirements, Air Defense Artillery modernization provides the added benefit of enhancing National Guard capabilities in the counter-drug and operations other than war arenas. Approval of this proposal would enable Army National Guard Air Defense to remain an integral, cost-effective, and viable part of the Total Force into the 21st century.

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**CHAPTER I**

**INTRODUCTION**

## INTRODUCTION

The intent of this paper is to examine the role of the Army National Guard in ground-based air defense and to outline a proposal for modernizing Army National Guard Air Defense Artillery forces commensurate with their integral role as a viable and combat-ready element of the Total Force. The modernization strategy articulated in this proposal is divided into two distinct phases. Short-range strategy encompasses modernization initiatives from the present through the year 2000. Long-range strategy looks past the year 2000 to the year 2015 timeframe.

The overall planning methodology used is adopted from the Army Long-Range Planning System Model specified in Army Regulation 11-32<sup>1</sup> and incorporated into National Guard Regulation 11-32 (DRAFT).<sup>2</sup> The driving forces for this planning effort are the corporate visions of the Chief of the National Guard Bureau, the Director of the Army National Guard, and the Adjutants General of the various states that provided guidance used to develop this proposal. Information and assistance were provided by selected components of the Department of the Army, United States Army Forces Command, United States Army Air Defense Artillery School, and various State Area Command staffs who contributed their expertise and experience to the author, using the Total Quality Management Model.<sup>3</sup>



**CHAPTER II**

**THE ROLE OF THE TOTAL FORCE  
IN THE NEW WORLD ORDER**

## **THE ROLE OF THE TOTAL FORCE IN THE NEW WORLD ORDER**

The fall of the Berlin Wall, the dissolution of the Warsaw Pact, and the collapse of the Soviet Union have resulted in the creation of a New World Order.<sup>4</sup> Within this New World Order, the United States has emerged as the world's only remaining superpower. This role places our Nation in a position where it is called upon to be the world's leader, a global peacekeeper, and a model for all to emulate.<sup>5</sup>

With recent developments come many challenges. The victory of the United States and its coalition partners in the Persian Gulf, the deployment of American forces to Somalia, the current conflict in Bosnia-Herzegovina, and the potential for crisis in the Korean Peninsula indicate that the world remains a volatile place. Subnational ethnic and religious rivalries, international terrorism, the production and trafficking of illegal drugs, and the proliferation of conventional weapons and weapons of mass destruction fuel an already unstable state of affairs.<sup>6</sup>

Throughout this unstable environment emerges one remaining stabilizing force--the United States of America. Previous administrations have recognized the importance of our role in ensuring peace and stability. The Clinton Administration has demonstrated its intent to continue to commit American forces to active peacemaking, peacebuilding, and peacekeeping operations and, if necessary, to combat, to protect this Nation's vital interests.<sup>7</sup>

## **NATIONAL SECURITY AND MILITARY STRATEGIES**

The National Security Strategy of the United States identifies national security interests and objectives as:

- The survival of the United States as a free and independent nation and the protection of its fundamental values, institutions, and people.
- Global and regional stability which encourages peaceful change and progress.
- Open, democratic, and representative political systems worldwide.
- An open international trading and economic system which benefits all participants.
- An enduring global faith in America; that it can and will lead in a collective response to the world's crisis.

This strategy demonstrates cohesive political, economic, and military policies in response to the changing environment and espouses those principles inherent to the reflection of our national will.\*

The National Military Strategy (NMS) supports the National Security Strategy. It is a dramatic departure from the Cold War concept of global containment with its reliance on strategic nuclear deterrence and forward deployment and is built on the

concepts of regionally focused defense and adaptive response.' In line with these concepts, the Armed Forces will be largely comprised of smaller, well-trained, more mobile, CONUS-based forces that can be tailored for rapid-deployment power projection anywhere in the world. It must be poised to protect this Nation's vital interests consistent with the national intent, concurrent with retaining the capability of achieving decisive victory across the continuum of military operations.<sup>10</sup>

### **ROLES AND MISSIONS**

The evolution of the current NMS, coupled with the requirement to reduce the budget deficit, have resulted in significant force structure realignments and budget reductions within the Department of Defense. Since 1990, a number of studies geared to facilitate these actions have been conducted to determine the proper roles and missions for each component of the Armed Forces.

The first of these studies conducted was the "Total Force Policy Study," mandated by the National Defense Act of 1990.<sup>11</sup> The second was the "Assessment of the Structure and Mix of Future Active and Reserve Forces"--the so-called "RAND Study"--required by the National Defense Authorization Act for Fiscal years 1992 and 1993.<sup>12</sup> The third study was the "Base Force Study," conducted under the direct supervision of General Colin L. Powell, former Chairman of the Joint Chiefs of Staff.<sup>13</sup> Most

recently, in October 1993, the Department of Defense, under the direction of former Secretary of Defense Les Aspin, concluded the "Bottom-Up Review."<sup>14</sup>

While these studies differed on their approaches and recommendations, they all agreed that the Total Force Policy remains viable today.<sup>15</sup> The impact of this recognition, coupled with the downsizing of Active Component forces, mandate that the Reserve Components will continue to play a vital role in the Nation's defense.<sup>16</sup>

The Bottom-Up Review, however, recognized a need for a realignment of roles and missions among components. These realignments have resulted in a reallocation of roles among the Army National Guard and the Army Reserve. In the future, the Army National Guard will concentrate on fielding combat and combat support forces for wartime contingencies. The Army Reserve will concentrate on providing combat service support forces.<sup>17</sup>

#### **THE NATIONAL GUARD**

Positions taken by the Army Reserve Forces Policy Committee (ARFPC) and dialogue at the Executive and Congressional levels indicate an ever increasing trend toward expansion of the National Guard's role in the performance of its traditional wartime and peacetime missions.<sup>18</sup> Currently the National Guard's five major missions are:

- a. Warfighting
- b. State Contingency Operations
- c. Counter-Drug Support
- d. Community Development
- e. Nationbuilding.<sup>19</sup>

The addition of the latter three missions is a recent departure from the Guard's traditional roles. These new missions have recently evolved based on the recognized need of the Executive and Legislative branches of government to commit the military, specifically the National Guard, to the "War on Drugs"<sup>20</sup> and by the efforts of the National Guard leadership to commit its forces to the objective of "Adding Value to America."<sup>21</sup> Beyond these, the possibility of using the National Guard to perform a myriad of other missions looms on the horizon.<sup>22</sup>

**CHAPTER III**

**AIR DEFENSE ARTILLERY  
IN THE TOTAL FORCE**

## **THE THREAT**

As the Persian Gulf War demonstrated, the air threat of the future will be different than that formerly posed by the Warsaw Pact. No longer can the commander consider manned air-breathing systems as the only, or even the primary, threat to United States or allied forces.<sup>23</sup>

While the joint air arm can be expected to deal effectively with the fixed wing threat, the proliferation of relatively sophisticated, yet inexpensive, weapons and technology requires a synergy of defensive counter-air and ground-based air defense to cope with the evolving threat across the entire air threat spectrum. Priority targets for ground-based air defense systems will be helicopters, strategic ballistic missiles (ICBMs/SLBMs), tactical ballistic missiles (TBMs), cruise missiles (CMs), and tactical air-to-surface missiles (TASMs). Unmanned aerial vehicles (UAVs), aerial reconnaissance-surveillance-target acquisition (RSTA) systems, satellites, and fixed-wing (FW) aircraft leakers that survive friendly combat air patrols are also threats.

The transfer of new technology and that relative to the production of weapons of mass destruction (WMD) is of particular concern to our interests and those of our allies. In the hands of rogue terrorists or rogue nations, they can fuel the dangers inherent to an already volatile world.<sup>24</sup>



The variety of threats pose ever increasing quantitative and qualitative challenges to our forces. These threats require trained and ready forces equipped with modern, strategically deployable air defense systems that are lethal, versatile, and survivable to counter the entire threat spectrum across the operational continuum of the battlefield of the future.<sup>25</sup>

The Total Force Policy Study,<sup>26</sup> RAND Study,<sup>27</sup> Base Force Study,<sup>28</sup> and Bottom-Up Review<sup>29</sup> all concluded that the mission areas where Reserve Component forces could most effectively contribute to the Army's warfighting capabilities are in non-maneuver combat arms, combat support, and combat service support. The Total Force Policy Study specifically identified Air Defense Artillery as an ideal example of a mission area where the Reserve Components had proven their mettle and could provide the requisite combat power, without a degradation in mission capability.<sup>30</sup>

#### **AIR DEFENSE AS A TOTAL FORCE MISSION**

Throughout the Army, and within the Air Defense Artillery community, it has long been recognized that Army National Guard Air Defense Artillery units have historically been among the best in the force.<sup>31</sup> While the lack of a conventional air threat precluded the mobilization and deployment of Army National Guard Air Defense units to the Persian Gulf, their demonstrated performance during recent Operational Certification Evaluations

(OCE), and in a myriad of Joint Training Exercises (JTXs) like JTX "Roving Sands 92 and 93," prove that these forces are ready for deployment.<sup>32</sup>

In his book, The U.S. Army in Transition II, Lieutenant General Frederic J. Brown, USA (Retired), states that:

"Reserve usefulness will be determined by contingency-ready functional Battlefield Operating System (BOS) capability organized in constituted units."<sup>33</sup>

He goes on to identify Air Defense as one of those Battlefield Operating Systems.

After examining United States and allied requirements for specific contingencies, General Brown contends that only that amount of Air Defense that must be immediately ready to meet contingency deployment deadlines should be in the Active Component and the balance should be in the Reserve Components.<sup>34</sup> He goes on to state that, with enhanced full-time manning, up to 50-75% of the Total Force Patriot capability could be assigned to the National Guard.<sup>35</sup> In an age when a primary objective is reducing the budget deficit, National Guard organizations, estimated to cost 15-21% of comparable active component organizations, provide an attractive alternative to more expensive active component forces.<sup>36</sup>

## **FORCE STRUCTURE AND MIX**

The analytical tool that the Department of the Army uses to determine the objective structure and mix of Active and Reserve Component (AC/RC) forces is the Total Army Analysis (TAA) process. Charged with basing its findings on strategic guidance, the evolving threat, and appropriate planning scenarios focused on projected contingencies, the TAA's purpose is to arrive at the optimum objective AC/RC force mix that can effectively execute all requisite operational missions.<sup>37</sup>

The latest versions of Total Army Analysis findings are embodied in the results of two studies. These studies are entitled TAA 1999 and TAA 2001. Each of these studies establish an objective force structure and mix envisioned to be in place in the years 1999 and 2001, respectively.<sup>38</sup>

Despite the fact that the National Guard has proven consistently that it can effectively perform the Air Defense mission, the post TAA-1999 period retains 61.7% of the Air Defense Artillery force in the Active Component. With only 38.3% in the National Guard, this Active Component (AC) to Reserve Component (RC) force ratio is higher than any other branch in the Army. In comparison, Aviation only retains 58%, Infantry 55%, Armor 51%, and Field Artillery 44% of their forces in their respective Active Component force structure.<sup>39</sup>

In this light, the results of TAA 1999/2001 fail to take into account the National Guard's full potential in the air

defense warfighting arena. If the Guard is ideally suited to perform in the air defense mission, as previous studies demonstrate, it stands to reason that it should be allocated a greater share of operational missions and a larger portion of the force mix. Given the current shortfalls in strategic mobility, the projected increases in warning time, and the cost-effectiveness of operating and sustaining Reserve Component units, such an allocation would be both fiscally prudent and operationally sound.

Not considered in the Total Army Analysis, but significant in its own right, is the increased capability that enhanced Air Defense force structure would provide the National Guard in the category of "Operations Other Than War." A prime example of the utility of this capability is in the area of counter-drug support.

Since the passage of the National Defense Authorization Act of 1989, the National Guard has been actively involved in the counter-drug mission.<sup>40</sup> The allocation and modernization of additional National Guard Air Defense forces would dramatically increase the Guard's ability to support civilian law enforcement agencies by resourcing the assets to augment in-place radar coverage missioned to detect incursions by small aircraft attempting to smuggle drugs across this nation's borders.

While branch integrity and certain contingency response considerations require that the Active Component retain a significant portion of the Air Defense Artillery force, a

redistribution of assets and modernization of the entire force are necessary to optimize and balance cost effectiveness and overall mission capability. Such a balance is essential to meet projected force structure and budget ceiling limits, while providing the optimum firepower necessary to meet and defeat the ever evolving threat.

## **CHAPTER IV**

### **ARMY NATIONAL GUARD AIR DEFENSE FORCE STRUCTURE**

## **CURRENT AND NEAR-RANGE FORCE STRUCTURE**

At the present time ARNG Air Defense Artillery force structure consists of three Air Defense Artillery brigades and 18 Air Defense Artillery battalions. The 18 battalions in the force consist of:

- 4 HAWK missile battalions;
- 8 Corps/Echelon Above Corps (EAC) Chaparral missile battalions; and,
- 6 Divisional Stinger missile battalions.

These organizations are currently in various stages of activation, fielding, training, and deployment validation.<sup>41</sup>

By FY 1995, ARNG ADA force structure, while projecting to lose one its three brigade headquarters, is expected to grow to 22 battalions. These include:

- 1 Patriot missile battalion
- 5 HAWK missile battalions
- 7 Corps/EAC Chaparral missile battalions
- 1 Corps/EAC avenger battalion
- 8 Divisional Stinger missile battalions (2 cadre).

With delivery of the first ARNG Patriot battalion and the activation of the first Avenger battalion, scheduled for the 1995

timeframe, the Guard heralds in a new generation of missile systems.<sup>42</sup> Beyond this, with the fielding of the Guard's first Product Improvement Program (PIP) III Hawk missile battalion and the conversion of another from the PIP II to PIP III configurations this year, the Guard possesses the only missile system currently in the force with a demonstrated capability to defeat short-range ballistic missiles (SRBM), cruise missiles (CM), or unmanned aerial vehicles (UAV).<sup>43</sup>

While these developments represent a positive trend in ARNG Air Defense capabilities, by and large, these are the exceptions and not the rule. In the area of Brigade-level command and control, only one ARNG ADA brigade is currently equipped with the automated AN/TSQ-73 Missile Minder Command and Control System. In the High Altitude Air Defense (HIMAD) arena, Hawk is being converted to the PIP III configuration, only as it, and its support base, leave the Active Component Air Defense force.

In the Forward Area Air Defense (FAAD) arena, all Corps/EAC ADA battalions were originally projected for conversion to the new Avenger system. Budget cuts and the priority reallocation of Avenger units to AC division forces, have forced the retention of the antiquated Chaparral systems in all seven, currently fielded, Corps/EAC battalions in the ARNG force for the foreseeable future.<sup>44</sup> In the divisional ADA arena, 6 battalions are in various stages of fielding. Instead of being equipped with the Avenger or the M2 Bradley Stinger Fighting Vehicle (BSFV) like their AC counterparts, however, they are currently programmed to



retain the Man Portable Air Defense System (MANPADS) version of the Stinger weapons system. Transported in a version of the M-113 series carrier, ARNG Stinger gunners will continue to be exposed to hostile fire as they dismount to engage targets in combat."

Finally, in the areas of FAAD Command and Control and Early Warning, funding has been withdrawn to support National Guard fielding of the Army's new FAAD Command, Control Communications and Intelligence (FAAD) C<sup>3</sup>I) System and TPQ-36A Ground Based Sensor (GBS) System, regardless of priority or mission. This leaves the ARNG FAAD force dependent on World War II technology (binoculars and radios) for the conduct of these functions and leaves them extremely vulnerable to surprise attack in a combat environment."

#### **TAA 1999 PROJECTIONS**

In spite of the findings of the Total Force Policy Study, the Active Component (AC) is programmed to retain approximately 61.7% of the Air Defense Artillery force structure in the post-TAA 99 period. The AC will retain at least 5 and possibly 6 Air Defense Artillery brigades with the possibility of relinquishing one ADA Brigade headquarters to the ARNG as the ARNG is forced to inactivate one of its three ADA Brigade headquarters."

The AC will retain the preponderance of Patriot in the ADA force, with the exception of the one 4-battery battalion

allocated to the ARNG in FY 95. It will modernize the Patriot Force to the PAC-3/ERINT configuration, as it inactivates its remaining HAWK assets in the FY 1994-95 timeframe. Having already divested itself of Chaparral, and a large portion of the support and training base for the Chaparral System prior to FY 1993-94, the AC, in effect, will become an exclusively Patriot/Avenger force at the Corps/EAC level. AC Divisional and Separate Brigade units will be equipped with the Avenger and/or the BSFV. All AC FAAD units will be equipped with FAAD C<sup>3</sup>I and the new TPQ-36A Ground Based Sensor for command and control and early warning."

In contrast, TAA-99 programs the ARNG to inactivate one of three of its currently structured ADA brigades. The ARNG force at the Corps/EAC level will then consist of 2 brigades, 1 Patriot missile battalion, 5 HAWK missile battalions, and 8 FAAD battalions. Originally programmed and funded to convert all 7 FAAD battalions from the antiquated Chaparral missile system to the more modern and mobile Avenger system, TAA-99 projects the retention of Chaparral in all 7 currently fielded Corps/EAC battalions the ARNG ADA force, and the activation of only one Avenger battalion in the process."

At the divisional level, MANPADs Stinger on M-113 carriers will remain the mainstay of the ARNG force until sufficient BSFV carriers to meet operational requirements are available for allocation to ARNG divisions. In the FAAD C<sup>3</sup>I and GBS arenas,

the AC is programmed for system fielding, with the ARNG force remaining below-the-line for resourcing.<sup>50</sup>

#### **TAA 2001 PROJECTIONS**

TAA 2001 heralds the activation and deployment of the first of a new generation of missile systems in the Active Component. The Theater High Altitude Air Defense System (THAAD) will provide an enhanced capability against tactical ballistic missiles and other air threats in the theater area of operations. The AC will continue to retain 9 Patriot battalions in an upgraded PAC-3/ERINT configuration, leaving the ARNG with only one Patriot battalion previously allocated.<sup>51</sup>

FAAD at the Corps/EAC levels remains relatively the same as in the TAA-99 Force Structure, with the AC continuing to complete its conversion of all of its battalions to Avenger. Divisional ADA battalions will be fully equipped with the Avenger, and/or BSFV. FAAD C<sup>3</sup>I and GBS remain AC only assets, leaving the ARNG battalions only partially converted and without the latter two systems.<sup>52</sup>

The ARNG ADA force in TAA 2001 will remain relatively the same as the TAA 1999 force. One Patriot battalion, 5 HAWK battalions, 1 Avenger battalion, and 7 Chaparral battalions will comprise the Corps/EAC ARNG ADA force. Equipped almost exclusively with RC-only missile systems, and an already diminishing training and support base, at least 12 battalions (5

HAWK and 7 Chaparral) remain ill-equipped to meet the mission requirements of the 21st century."

At the divisional level, the problem remains virtually the same. With no follow-on plan to replace Stinger Under Armor (SUA) for the ARNG, and no guarantee that the BSFV will be in the future ARNG force, divisional assets will remain extremely vulnerable. Coupled with the lack of FAAD C<sup>3</sup>I and GBS, ARNG FAAD forces at all levels, the ARNG will be expected to continue to fight on a modern battlefield with antiquated technology and little, if any, battlefield support."

#### **ANALYSIS OF CURRENT PLAN**

A careful review and analysis of the Army's current Air Defense force structure and its requisite modernization initiatives uncovers a number of major shortfalls. The collective effect of these shortfalls is that they undermine the cohesion of the Air Defense Artillery branch, fail to consider priority mission requirements, accept a resultant gap in capability, culminate in inefficient allocation of equipment and resources, and ultimately result in the long-term retention of RC-only systems.

First, the plan undermines the cohesion of the branch because it lacks a Total Force perspective and focuses on modernizing and equipping the AC, while almost totally disregarding RC requirements. Nowhere is this more evident than

in the FAAD arena where, unlike the AC, Chaparral conversion to Avenger has been cancelled and funding for FAAD C'I and TPQ-36A GBS has been terminated. In the HIMAD arena, funding to support National Guard PIP III Hawk is in jeopardy beyond the 1997 timeframe and with Hawk out of the active component, Training and Doctrine Command (TRADOC) is already planning to terminate future training support.<sup>55</sup>

Second, the plan fails to adequately address mission requirements by ignoring wartime contingency force priorities. The result is that modernization of certain high priority National Guard contingency force units has been sacrificed in order to equip lower priority AC Air Defense units with new equipment such as missile systems, enhanced radars, and command and control mechanisms in violation of the "First to Fight" policy. The effect is that National Guard contingency units, given the order, will deploy to battle using 1960s vintage weapons systems, manual command and control, and binoculars as a primary means of early warning against air attack.<sup>56</sup>

Third, the near-term projected force structure and mix fails to provide an adequate interim capability to counter certain aspects of the evolving threat. Primarily a Patriot/Avenger force, the AC force lacks the requisite PIP III Hawk to provide an adequate capability against remotely piloted vehicles (RPV) and cruise missile targets. With the inactivation of PIP III Hawk in the AC force, a decremented equipment and training support base for the RC force is programmed in the post-1997

period. If present plans to withdraw complete funding for Hawk in the post-1997 era come to fruition, the force will be susceptible to this type of attack until CORPSAM is finally fielded sometime after FY 2000. Given current budget projections, the demonstration/validation phase of CORPSAM has been delayed beyond the year 1998, without any identifiable force structure, except that of RC Hawk, available for its activation in the future.<sup>57</sup>

Fourth, the plan culminates in the ineffectual and inefficient allocation of equipment and resources. A primary example of this is the Army's recent decision to prioritize the allocation of Avenger to the AC division over its allocation to the Corps Air Defense Artillery brigade.<sup>58</sup> Strictly used in a static rear area protection role at the division and corps level, Avenger is capable of performing the mission unarmored and mounted in a HMMWV vehicle. Avenger lacks the mobility and survivability to keep up with M-1 Abrams and M-2 Bradley maneuver elements at the division level, should the need arise. Not ideal, but much better suited for the division-level mission, is the M-48A3 Chaparral missile system. The Chaparral is track-mounted and lightly armored. Cost-effectively upgraded to the Roadrunner configuration, it can shoot on the move and provide an air defense and anti-armor missile capability. Allocation of the Roadrunner to both AC and RC Division and Separate Brigade Air Defense organizations would free existing Avenger assets for

allocation to AC and RC Corps/EAC air defense battalions as originally envisioned."

The final shortfall that must be addressed is the long-term retention of RC-only weapons systems in the Air Defense Artillery force. National Guard experiences with the M-42 Duster, the U.S. Roland, and, most recently, the Chaparral air defense system show that the training base, spare parts, ammunition stocks, and other support quickly erodes with the inactivation of a weapons system in the Active Component. As the Army National Guard assumes the Total Army Hawk mission, these same experiences are beginning to come to light.<sup>60</sup> For this reason, the ARNG favors concurrent equipping and fielding of all ADA systems regardless of component.

As studies illustrated, one of the reasons that our sister services have blended AC and RC forces so effectively, is the enhancement of mutual trust and confidence coupled with the increased mission capability gained by equipping their forces concurrently to the same standard. One of the reasons that the Army, and ADA in particular, have had problems in blending its AC and RC forces is this lack of mutual trust and confidence. These problems are intensified by a lack of sufficient funding to equip all ARNG forces with new and modern equipment to facilitate concurrent fielding. The proposal that I will present in the remainder of this document addresses those problems, and, without the addition of force structure, proposes an equitable solution to better align the AC and RC Air Defense Artillery force.<sup>61</sup>

## **CHAPTER V**

### **STRATEGIC VISION AND STRATEGY DEVELOPMENT**



## **VISION STATEMENT**

To lay the groundwork for this proposed new strategy, a vision statement for Army National Guard Air Defense Artillery has been articulated by the Chief of the National Guard Bureau-designate, Major General Edward D. Baca. It is specified as follows:

To maintain an Army National Guard Air Defense Artillery force that is the most effective citizen-soldier Air Defense force in the world--manned with quality people, trained to a fine edge, and equipped with modern state-of-the-art equipment--capable and ready to execute its wartime and peacetime missions in an eager and competent manner to meet the challenges of the 21st century.<sup>62</sup>

This vision statement clearly reflects General Baca's long-range focus and his commitment to the "One Army-One Standard" concept.

## **INTENT OF THE STRATEGY**

The intent of the ARNG Air Defense Modernization strategy is to enhance the Army National Guard Air Defense Force's viability as a combat ready and cost-effective member of the Army Air Defense Force Structure, while enhancing its capability to meet present and evolving Army National Guard peacetime missions. It proposes to do this by:

- Continuing to modernize the ARNG Air Defense force in order to equip it for its warfighting role as a member of the Total Force, beyond the year 2015.

- Allocating it viable and realistic missions that the ARNG ADA force can perform effectively and in a cost-efficient manner.

- Enhancing combat readiness, interoperability and supportability by fielding new systems concurrent with the Active Component.

- Staying within current traditional and full-time manning authorizations, or downsizing based on projected manpower reductions, through modernization, rather than inactivation, of units.

- Supporting the inclusion of the ARNG Air Defense Artillery units in the FORSCOM "BOLD SHIFT" Training Program."

- Enhancing wartime and peacetime command and control to facilitate timely reaction and response.

- Arraying the ARNG Air Defense force to facilitate and optimize support for counter-drug and other "operations other than war" missions.

- Preventing armory closures and stationing the force to best support community development programs that "Add Value to America."

This strategy recognizes ARNG Air Defense as a coequal partner with Active Component Air Defense in providing effective protection for the Total Force. As such, it supports the concept

of "One Army--One Standard" concept and translates this into action by promoting the philosophy of standardization in equipping and training the force to the same high degree of proficiency, prioritized on the basis of mission requirements, without regard to component.

#### **FACTORS IMPACTING ON STRATEGY**

In formulating the proposed National Guard Air Defense force modernization strategy, the following factors were considered:

- Future force configurations will be based on America's new National Military Strategy (NMS)<sup>66</sup> and are based on retaining the capability to respond to two near simultaneous Major Regional Contingencies (MRCs).<sup>66</sup>

- The Total Army Analysis (TAA) 1999/2001 models to support this strategy will be implemented with modifications.<sup>67</sup>

- Budget and force structure reductions will take place on a nationwide basis.

- Missioning, training, and resourcing will be conducted in accordance with guidelines developed under the FORSCOM "BOLD SHIFT" model.<sup>68</sup>

- Force modernization will continue to take place commensurate with mission considerations.

These factors are indicative of the current environment. They reflect the guidelines promulgated by the Department of Defense" and Department of the Army that will establish the foundations for the Army of the future."<sup>70</sup>

#### **ASSUMPTIONS BEARING ON STRATEGY**

The Army National Guard Air Defense Artillery Modernization strategy is based on the following assumptions:

- The Department of Defense (DOD), Department of the Army (DA), U.S. Army Forces Command (FORSCOM), and the National Guard Bureau (NGB) will be receptive to alternative counter-proposals that effectively support wartime, counter-drug, and operations other than war contingencies in a cost-efficient manner.
- Force structure modifications and conversions must occur within prescribed manpower ceilings.
- Full-time manning authorizations will be allocated commensurate with mission requirements, Force Activity Designator (FAD) and Department of the Army Master Priority List (DAMPL) sequence.
- Equipment and support infrastructure can be made available to facilitate timely conversion and fielding.
- Additional resources and required support (i.e., school quotas, inter-service support agreements, facilities, and other resources) will be provided to facilitate fielding.

● Program Objective Memorandum (POM) and budget authorizations will be adjusted to facilitate implementation of the plan, if approved.

For the strategy proposed in this plan to work, these assumptions must remain valid for planning. After careful examination and consideration, given the current environment they appear to be reasonable and prudent planning factors.

#### **BASIC TENETS OF STRATEGY**

To formulate an equitable and cost effective strategy for Air Defense, while ensuring combat readiness, the following principles must apply to both the AC and RC forces:

● Missions must be properly aligned based on demonstrated capabilities and in consonance with "BOLD SHIFT" considerations.<sup>71</sup>

● Force structure must be allocated based on the capability required to effectively perform missions in a cost-efficient manner, without regard to component.

● Modernization must occur based on mission criticality, equipping high priority units first and the remainder of the force, in accordance with FAD and DAMPL sequence.

• Weapons systems must be concurrently fielded in the AC and RC to ensure interoperability, supportability, and sustainability.

The present Air Defense Artillery Modernization Plan fails to take into account these tenets and is severely lacking a "Total Force" focus."

While certain AC and RC organizations have been identified for assignment to contingency force packages, formal wartime alignments have not been set for all units. While it is recognized that this was not its original intent, the FORSCOM "BOLD SHIFT" initiative provides a useful framework for aligning the force by specifying guidelines for peacetime training alignments." Since it has commonly been the Army's philosophy to train as it expects to fight, a mirroring of peacetime and wartime alignments were possible, would be desirable.

In light of current initiatives, three inter-related factors should play a key role in the allocation of force structure. The first is mission capability; the second, availability of strategic lift; and the third, cost effectiveness. In a case where AC forces are the only forces capable of performing the mission within the time frames dictated by the crisis and available lift, the AC should be allocated the force structure. In cases where RC units are capable of performing the mission and would be available to meet deployment windows, including certain contingency force windows, cost-effectiveness factors favor RC

force structure allocation. Given these guidelines, a number of ADA missions allocated to AC forces could be transferred to the RC.

Equipment allocation has traditionally been based on a "First to Fight" policy.<sup>4</sup> In the case of equipment allocation and modernization initiatives relative to the current ADA force, component and not FAD or DAMPL sequence number, has been the driving factor. Violations of this policy continue to result in the equipping of relatively low priority AC units with modern state-of-the-art weapons systems, while high priority RC ADA contingency force units continue to be equipped with obsolete equipment. The strategy articulated in this proposal attempts to correct this problem by equipping those units that form the tip of the spear, regardless of component, with the best and most modern equipment available to meet mission requirements.

The last principle stresses the importance of AC/RC standardization. Standardization is absolutely necessary to ensure the interoperability, supportability, and sustainability of organizations and weapons systems throughout the force. Concurrent equipping of AC and RC units with modern equipment achieves standardization and provides the requisite combat capability to meet the evolving threat.

Adherence to these guidelines will ensure that the AC and RC Air Defense Artillery forces of the future are indeed a "Total Force." Resourced in this manner, America's Air Defense Force will be a more lethal, mobile, deployable, and sustainable force

that can meet the challenges of the future across the continuum of wartime and peacetime operations.<sup>75</sup>



## **CHAPTER VI**

### **SHORT-RANGE STRATEGY**

## **SHORT-RANGE STRATEGY OVERVIEW**

The Army National Guard's Short-Range Modernization Strategy is designed for implementation during the FY 1994-2000 timeframe. Using the Total Army Analysis 1999 force as a baseline,<sup>76</sup> with minor modifications, it can be adapted to preserve and enhance the Army National Guard's vital role in executing its wartime air defense mission, while providing ancillary coverage for counter-drug support and other operations as directed.

The goals of the Army National Guard's short-term strategy are listed in priority. They are:

1. To properly align all Air Defense forces under wartime chains of command and to ensure that they are allocated realistic and viable warfighting missions.
2. To field a viable Forward Area Air Defense (FAAD) Force with modern weapons systems, effective command and control, and a standardized sensor for real-time early warning.
3. To field and upgrade the HAWK PIP III System and enhance HAWK Command and Control to keep it a viable system to the year 2000.
4. To field Patriot and convert the system to the PAC-3/ERINT versions concurrent with the Active Component.
5. To provide ARNG brigade headquarters with an automated and enhanced command and control capability to enable them to

effectively exercise command and control their assigned AC and RC battalions in a combat environment.

Accomplishment of these priorities in a timely manner will keep the Army National Guard Air Defense Artillery force a deployable and combat ready asset through the end of the decade.

#### **FORWARD AREA AIR DEFENSE**

The Avenger is the radar-mounted version of the Stinger missile system mounted on the High Mobility Multi-Wheeled Vehicle (HMMWV) carrier. It was designed to provide short-range air defense protection for critical assets in the division and corps rear areas.<sup>77</sup>

The activation of the first ARNG Avenger battalion and the conversion of all seven of our remaining Chaparral battalions to Avenger is an imperative and clearly remains our highest priority. At present the conversion of our 7 Chaparral battalions to Avenger remains unresourced, but given their role in support of Corps/EAC ADA brigades, this is an absolutely essential requirement.

Chaparral has been in the force since 1967 as an interim, off the shelf system and, although modified to give it a day/night capability and increased mobility, in the present configuration it fails to meet the evolving requirements of a modern air defense system of the 21st century. Originally

programmed to be phased out by the early part of the next decade, funding cutbacks for Avenger are mandating its retention in the ARNG ADA force for the foreseeable future. With its phasing out of the Active Component inventory, both the training and logistics support base for Chaparral have significantly diminished. This has resulted in a lack of spare parts, the inadequate production of new "G-Model" Chaparral missiles, and a degradation in combat readiness.

The requirements envisioned in the new NMS for increased lethality, mobility, and deployability,<sup>78</sup> coupled with the high priority missions of the Army National Guard's FAAD battalions clearly justify priority allocation of the Avenger system at the Corps/EAC level.<sup>79</sup> The simplicity and maintainability of the system makes it an ideal ARNG weapon with little or no additional full-time manning requirement.

The similarity of tactics to Chaparral at the platoon, battery, and battalion-level facilitates rapid transition training that could be accomplished within approximately one two-week Annual Training period. Given this timeline, battalion deployability certification could be achieved within one training year for converting units<sup>80</sup>.

In addition to its warfighting capabilities, the Avenger's on-board FLIR system provides it with a capability to usually detect and track aircraft in a nighttime environment. With the provision of newly designed optical pods that have been developed to enhance on-board capabilities of the system, the system could

be arrayed along likely avenues of approach or around target airfields to provide added value in the counter-drug role."<sup>1</sup>

Given the funding, studies show that it is anticipated that two additional battalions of Avenger could be produced in FY 95, three in FY 96, and the remaining three in FY 97 to fulfill the requirements of the ARNG, without impacting AC fielding."<sup>2</sup>

Without additional funding, a redistribution of 7 unit sets of Avenger from AC Divisional units to RC Corps ADA units could fill this void. Since Avenger battalions are significantly smaller than Chaparral battalions, conversion would facilitate ARNG downsizing to meet Congressionally mandated manpower ceilings. The obvious advantage of this manpower savings, coupled with the reduced operational and sustainment costs of fielding and maintaining a more modern system with less expensive missiles like Avenger in the force, compared to the high costs of sustaining a track-mounted, maintenance intense, and small density system like Chaparral, make Avenger a logical and cost effective solution to the FAAD problem."<sup>3</sup>

The provision of the TPQ-36A Ground Based Sensor and FAAD C<sup>3</sup>I are imbedded in our second priority. Originally programmed for the ARNG, they, too, have fallen below-the-line for resourcing without regard to operational mission. Without these systems ARNG FAAD battalions are basically reliant on World War II technology (soldiers with binoculars and radios) to fulfill their command and control requirements. In this regard, provision of these systems would provide the ARNG a superb

capability for command and control and early warning that would enable the ARNG ADA force to meet the requirements of modern wartime and counter-drug operations."

With HAWK leaving the Active Component force structure, a number of Continuous Wave Acquisition Radars (CWARs) will be available in the logistics system. Made available to our ARNG FAAD battalions and equipped with Remote Terminal Units (RTU), these systems could provide an interim solution to the FAAD C<sup>3</sup>I and GBS resourcing problem in the short-term. Enhanced with field tested counter-drug modifications, the CWAR could also provide the ARNG the capability to cover low-level gaps in surveillance beyond the capabilities of civilian AEROSTATS and other sensors in the counter-drug role".

While CWAR and its associated equipment provides a good interim solution to the command and control and early warning problem, standardized AC/RC modernization efforts remain the ultimate objective. The provision of FAAD C<sup>3</sup>I and GBS provide an ideal command and control and sensor array. Coupled with Avenger, these systems meet the FAAD demands of the present and the future.

Using modernization of the Corps/EAC Chaparral battalions as a baseline, Divisional and Separate Brigade Air Defense elements would be modernized utilizing the same systems fielded in the Active Component to meet the maneuver force requirement. At present, the systems programmed for the Active Component are the Bradley Stinger Fighting Vehicle (BSFV), and the Avenger."

With Divisional Avenger assets redistributed to resource Corps/EAC air defense requirements, a system much better suited to meeting the Division and Separate Brigade mission force requirements is the more mobile, track-mounted Chaparral. Upgraded to U.S. Army Missile Command's Roadrunner configuration, Chaparral would provide the shoot on the move, aircraft and tank killing capability, coupled with the increased mobility required to keep up with the maneuver force. Deployed in both AC and RC heavy divisions, this system is a mission-capable, cost effective, alternative to the Avenger at the heavy division level. Light divisions would be equipped with Avenger or the MANPADs Stinger missile system.

FAAD C<sup>3</sup>I and GBS would be added concurrently in the AC/RC divisional force to provide FAAD forces so both components can accomplish the mission in a capable and cost effective manner." The result of this proposed redistribution of resources would realign the weapons systems with right missions on the battlefield. In doing so, the force would experience a dramatic increase in overall capability at minimal cost, an imperative consistent with the needs of the future.

#### **HAWK**

HAWK is a low to medium altitude air defense missile system designed to protect critical assets at the Corps/EAC levels. Capable of providing 360° air defense coverage, it is generally

deployed with Patriot to provide integrated air defense protection of an asset. As a complimentary system, it has the capability to provide protection for the Patriot system against low altitude aircraft, short-range tactical ballistic missiles and cruise missiles."

With HAWK completely phasing out of the Active Army in the FY 93-95 timeframe, the ARNG is beginning to experience the same degradation in its training and support base already evident in Chaparral. Without a viable replacement readily available, like CORPSAM or additional Patriot, the retention of HAWK in the ARNG force structure remains a reality through the year 2000. The scheduled transition to the PIP III configuration for already activated HAWK battalions is imperative, as is the activation of the fifth ARNG PIP III HAWK battalion.

The retention of HAWK in the USMC force structure provides a potentially short-term solution in easing the concerns of retaining and maintaining the Army RC-only system. By entering into an alliance with the USMC the ARNG can minimize the impact of a reduced support base in the Army, while continuing to improve the system to keep it a viable part of the force.

The Persian Gulf War proved the necessity for interoperability between HAWK and Patriot in executing their complimentary air defense missions. This is especially necessary because of HAWK's critical role in protecting Patriot and countering a number of other evolving threats. The upgrading of the AN/TSQ-73 to the Version 5 configuration, or the provision of



Patriot ICCs to brigade headquarters and HAWK battalions provide the capability necessary to meet this requirement. With Patriot the mainstay of today's ADA force, the Version 5 of the AN/TSQ-73 would be a cost-effective and available solution that would provide be a logical stepping stone to provision of the long-range objective system called an Air Defense Tactical Operations Center (ADTOC)."

Additional improvements that would enhance the Hawk system's utility in a combat environment would be the addition of the HAWK Mobility Product Improvement Package (PIP) and the incorporation or other improvements that would improve its operational capability in the counter-drug role. Both are cost effective alternatives that would give the system added valuable capabilities across the mission spectrum."

In light of projected budget reductions and reduced OPTEMPO, a cost-effective alternative that provides the means for sustaining training levels and economizing the use of equipment and resources is the use of simulators. The HAWK Advanced Training Simulator (HATS) would provide this capability. The minimum allocation of two HATS systems per HAWK battalion is required to meet this requirement."

HAWK will continue to remain the mainstay of the ARNG ADA force beyond the year 2000. It provides protection against TBMs, CMs, and other threats for Patriot and other critical assets. The challenge is to keep HAWK mobile until CORPSAM is fielded.

Meeting this challenge is a combat imperative that cannot be ignored."

### **PATRIOT**

Patriot is a medium to high altitude air defense missile system. It is capable of effectively engaging an array of hostile air threats from fixed-wing aircraft to tactical ballistic missiles."

The activation of the ARNG's first programmed Patriot battalion is scheduled for the FY 95 timeframe. This battalion will initially be composed of a headquarters battery and four-firing batteries with requisite command and control and maintenance capability." Serious consideration needs to be given to build it to the six battery configuration, consonant with the AC model. Originally programmed to roundout other AC Patriot battalions, the recent evolution of its own Corps mission dictates that its configuration be identical to its AC counterparts.

As the present Patriot system undergoes its transition to the Patriot PAC-3/ERINT configuration in the AC, concurrent improvements must be provided to the ARNG." Requisite minimum full-time manning must be provided to ensure that Patriot remains viable in the ARNG force. Depending on future force structure cuts in the AC and to facilitate adequate force structure for CORPSAM in the Active Component, transition of additional Patriot battalions to the ARNG remains the possibility. Allocating

additional Patriots to the National Guard is a cost effective alternative to ensure viable mission capability in the years to come.

#### **BRIGADE COMMAND AND CONTROL**

The TSQ-73 Missile Minder Command and Control system provides automated command and control at the HIMAD battalion and ADA brigade levels." At the present time only one ARNG Brigade in the force is equipped with the AN/TSQ-73. To ensure effective communications and coordination in a Joint Tactical Air Operations (JTAO) environment, and to provide positive control and procedural monitoring of subordinate ground-based Air Defense Artillery elements in an Integrated Air Defense (IAD) scenario, the provision of an automated Air Defense Command and Control capability is imperative.

Sufficient AN/TSQ-73 systems are currently available to support this initiative after AC inactivations of HAWK battalions in Europe and in CONUS. Priority must be given to providing these systems to the ARNG rather than placing these systems up for Foreign Military Sales (FMS). Upgrading these systems to the AN/TSQ-73 Version 5 configuration is a cost-effective measure that would enable the system to interoperate with Patriot and would provide a major stepping stone toward achieving the objective ADA ADTOC system of the future." Coupled with the addition of a Multi-Channel (UHF) communications capability at

the Brigade level, the addition of these components would provide the ARNG ADA Brigade with all the elements necessary to effectively conduct Joint Tactical Air Operations (JTAO), in a doctrinally sound and operationally conducive manner.

### **RESOURCING STRATEGY**

Resourcing the proposed strategy requires minimal funding and can be accomplished primarily by redistributing equipment currently in the inventory or already programmed for procurement. In the interest of maintaining or enhancing certain mission capabilities beyond the scope of systems in their current configurations, some additional funding may be necessary to support equipment upgrades.

Funding for the procurement of one battalion set of Avenger fire units and requisite support equipment has already been programmed. Equipment to support 7 additional battalion sets to resource the conversion of the 7 Corps/EAC Chaparral battalions in the force would come from assets already programmed for procurement. Of these, two battalion sets would be acquired from Avenger assets currently programmed for the two AC Air Defense battalions organic to divisions mandated by the Department of Defense for inactivation." The remaining 5 battalion sets would come from equipment currently assigned or programmed for procurement to support divisional ADA battalions in 5 AC heavy divisions. These divisional battalions, as well as all ARNG

divisional battalions and batteries organic to separate brigades, would, in turn, be equipped with the track-mounted M-48A3 Chaparral missile system.

With minimal funding, Chaparral could be upgraded to the Roadrunner configuration. Roadrunner features enhanced mobility, a shoot on-the-move capability, improved armored protection, and a Hell-Fire missile tank killing capability. Funding for upgrades would come from resources currently programmed to support Bradley Stinger Fighting Vehicle (BSFV) development. BSFV would be cancelled and the remaining funds could be utilized for procurement of additional missiles and spare parts.

The TPQ-36A Ground-Based Sensor and FAAD command and control system assets would be provided from the same sources as Avenger assets. Long-term early warning would be provided by procurement of the TPQ-36A for heavy divisions and provision of either the Light and Special Division Sensors (LISDIS) already procured for the light division. Minimal funding would be necessary to support these requirements. Interim early warning would be provided by Continuous Wave Acquisition Radar (CWAR) assets owned by U.S. Army Missile Command. These assets, previously organic to AC Hawk battalions recently inactivated, are currently excess and programmed for foreign military sales. Enhanced by the addition of inexpensive Remote Terminal Units (RTU) procured by counter-drug funds, these systems could provide an in-place early warning capability at a reduced cost."

PIP III Hawk equipment has been provided to support the conversion of the first PIP II, and the activation of a second Hawk battalion, to the PIP III configuration. Equipment is currently programmed to support fielding of the remaining three PIP III Hawk battalions from AC Hawk inactivations.<sup>100</sup> One set of AC PIP III Hawk battalion equipment was modified prior to inactivation to incorporate the Hawk mobility package,<sup>101</sup> and another was modified to incorporate counter-drug radar enhancements. These two sets should be among those provided to the National Guard. The remaining sets should be upgraded to possess these features. Funding for procurement of these upgrades as well as funding for the HAWK Advanced Training Simulator must be attained from Congressional add-on and counter-drug programs funds.

Funding is currently programmed to support the activation of a 4-battery National Guard Patriot battalion in FY 1995.<sup>102</sup> Additional funding is needed to support the activation of two additional batteries to bring it up to the AC configuration. An effort should be made to obtain funding for these fire units through Congressional add-on funding.

One of the two ARNG Air Defense brigades in the force has already been equipped with the AN/TSQ-73 Missile Minder Command and Control System. Based on consultation with DA DCSOPS-DAMO-FDE, another AN/TSQ-73 has been identified from U.S. MICOM assets, made available by AC Hawk battalion inactivations to resource the remaining brigade headquarters' requirement.<sup>103</sup>

With minimal funding, the AN/TSQ-73 could be upgraded to the Version 5 configurations at both the Air Defense brigade and Hawk battalion levels. The version 5 would make the AN/TSQ-73 compatible with Patriot and give the system a relative capability similar to the objective Air Defense Tactical Operations Center (ADTOC). Funding for this upgrade would likely cost less than the AC Air Defense community's current program of equipping AC Air Defense brigades with Patriot Information Coordination Central (ICC). If implemented concurrently in both components, funding could be attained from savings incurred by reducing additional ICC procurement.<sup>104</sup>

As demonstrated, resourcing for this proposal would require minimal funding and would make optimum use of existing and already programmed equipment. In taking maximum advantage of non-developmental item (NDI) procurement, this strategy provides both Congressional and Department of Defense an attractive alternative to the retention of less capable, obsolete systems or unrealistic, high-cost modernization programs. The result is a cost-effective program that enhances the National Guard's warfighting and counter-drug capabilities for the future.

#### **ALLOCATION PRIORITIES**

All Air Defense Artillery units in the force, regardless of component, should be equipped based on mission priority. These priorities are usually specified by Force Activity Designator

(FAD) and Department of the Army Master Priority List (DAMPL) sequence number.<sup>105</sup>

As such, Contingency Force Pool (CFP) units should be equipped first based on force and support package. High priority non-contingency force units should be resourced second. Lower priority units should be the last units equipped based on operational necessity. Modernization and conversion should follow these same priorities based on established "First to Fight" criteria.<sup>106</sup>

Following the above-mentioned guidance, National Guard Contingency Force Pool (CFP) Air Defense units should be equipped, and modernized, concurrently with AC CFP units and ahead of AC non-contingency force units. To date, this has not been the case. Concurrently, all AC units are programmed for modernization, while high-priority RC units are doomed to obsolescence.

Generally, the remainder of those high priority ARNG Air Defense units not in the Contingency force pool are assigned to Corps/EAC Air Defense Artillery brigades. These should be equipped, and modernized, commensurate with their wartime brigades and ahead of lower priority AC and RC divisions.

Finally, both AC and RC divisional and separate brigade Air Defense units should be equipped concurrent with the priority of their parent organizations. These should follow FAD and DAMPL sequence number criteria.



Equipping and resourcing the force in this manner, without regard to component, meets combat readiness requirements and is in keeping with the Total Force concept. This allocation plan would ensure that the force deployed to fight the first battle will be the best equipped force to handle the mission and that the entire ADA force is equipped to optimize the best utilization of assets in the current ADA arsenal.

#### **SUMMARY OF SHORT-RANGE STRATEGY**

To sum up the ARNG's Short Range strategy, the accelerated fielding of Avenger as a viable and cost-effective replacement for Chaparral remains our top priority. To maximize its effectiveness, resourcing of FAAD C'I and GBS concurrent with the AC is paramount. Divisional FAAD should also be modernized to mirror its counterpart in the AC. Roadrunner may provide this capability.

HAWK remains the mainstay of ARNG HIMAD to the year 2000. It, together with its Command and Control System and requisite simulators, must be fielded, supported, and modernized to fill the current void in the Air Defense Artillery umbrella, pending the fielding of CORPSAM.

Patriot enters the ARNG arena for the first time in FY 95. It must be product-improved concurrently, as the AC transitions to Patriot PAC-3/ERINT, and resourced with personnel and

equipment necessary, to enable it to perform its vital Corps/EAC ADA mission.

Finally, an effective automated Command and Control System must be fielded in all ARNG Brigade headquarters. This will enable them to conduct integrated and synchronized air defense operations in a JTAO and IAD environment.

This plan provides those capabilities necessary to keep the ARNG force beyond the year 2000. In doing so, it facilitates "Total Force" integration in a cost effective manner by enhancing overall readiness within the framework of the TAA-1990 Force structure model.

## **CHAPTER VII**

### **LONG-RANGE STRATEGY**

## **LONG-RANGE STRATEGY OVERVIEW**

The Army National Guard's Long-Range Modernization Strategy is proposed for implementation during the FY 2001-2015 timeframe. Using the Total Army Analysis (TAA) 2001 force as a baseline, it can be adapted to optimize the role of Army National Guard Air Defense Artillery in the 21st century. Looking beyond the TAA-2001 model, it shapes the model to meet the requirements beyond that timeframe to set the stage for the force structure required for the future.<sup>107</sup>

The principles that lay the foundation for the ARNG force of the 21st century are articulated below. These principles specify that:

- Assignment of missions must be based on the ability to effectively perform them in the most cost-effective manner possible.

- Allocation of force structure must be based on assigned missions.

- Modernization of the entire AC/RC force structure must be based on mission criticality, equipping high priority units first, regardless of component, and the remaining units in accordance with FAD and DAMPL sequence.

- Modernization programs must focus on concurrent AC/RC fielding of future weapons systems, while avoiding the retention of obsolescent RC-only weapons systems, thereby emphasizing

interoperability, supportability, and sustainability of the force.

The above-mentioned principles support the concept of Total Force readiness and should be as applicable to the Active Component force as they are to the Army National Guard.

### **LONG-RANGE MODERNIZATION PRIORITIES**

The Army National Guard's long-range modernization priorities for FY 2001, and beyond, are outlined below. The order of priority is:

1. To retain the current force structure and to posture for possible growth based on a shift in AC/RC force mix.

2. To focus on developing a future follow-on replacement to HAWK, with priority to:

- (a) Theater High-Altitude Air Defense System (THAAD)
- (b) Corps Surface-to-Air Missile System (CORPSAM)
- (c) Patriot PAC-3/ERINT Surface-to-Air Missile System
- (d) National Missile Defense (NMD).

3. To pursue AC/RC concurrent fielding of the Air Defense Tactical Operations Center (ADTOC).

4. To examine Forward Area Air Defense (FAAD) follow-on options at the Corps/EAC and Division/Separate Brigade levels.

These priorities reflect the principles noted earlier and support the concept of modernizing the Total Force to a level capable of maintaining a viable warfighting capability, while preserving the necessary support base to sustain the Air Defense force of the 21st century.

### **HAWK**

As Hawk PIP III reaches the end of its life system support cycle and new missile systems are developed and fielded to meet the evolving threat, the Army and the National Guard must select a system to take its place in the force structure. The replacement system fielded for the National Guard should not be an antiquated, nondeployable RC-only system, but a modern missile system fielded in both the AC and RC, capable of meeting the evolving threat.

For operational reasons, THAAD, CORPSAM, Patriot PAC-3/ERINT, and the National Missile Defense (NMD) missile systems, in priority, all have the potential of being suitable replacements in the ARNG force. Prior to determining the optimum force mix, a careful analysis should be made, both in resourcing and full-time manning required, to support a follow-on program to succeed HAWK in the Army National Guard force. A detailed discussion of each of these potential replacements is included in the sections that follow.

## **THEATER HIGH ALTITUDE AIR DEFENSE SYSTEM (THAAD)**

The Theater High Altitude Air Defense System (THAAD) is currently projected to be funded in the FY 1995-99, with fielding projected at the end of the current decade. THAAD is the Army's primary missile system of the future to provide protection against Tactical Ballistic Missile (TBM) attack. As such, it will team with the Army's Patriot PAC-3/ERINT and CORPSAM, and the Navy's Aegis Standard Missile Block IV A and Sea-Based Upper Tier systems to provide high-altitude, long-range protection against the evolving threat posed by TBM and cruise missile proliferation.<sup>108</sup> At present, the Army intends to form only two battalions equipped with the THAAD system.

THAAD appears to be an ideal system for RC integration. With only two battalions programmed for fielding and a requirement to CONUS-base these battalions, the same logic can be applied to justify equipping the RC with THAAD, as was used by the Army in its allocation of a single Roland Missile Battalion to the ARNG in 1983. The lack of opportunities for assignment or upward mobility inherent to the presence of only two battalions in the AC force, coupled with possible constraints on OCONUS deployment of the system relative to limitations imposed by the Anti-Ballistic Missile (ABM) treaty, impact its optimum allocation to the AC force.<sup>109</sup> Coupled with these considerations, cost-effectiveness of minimum ARNG full-time manning and proven

success in fielding other systems, given this manning, provide solid justifications for fielding THAAD in the ARNG force.

The Roland experience proved that ARNG ADA units could achieve and sustain a high state of training and equipment readiness with sophisticated and modern ADA equipment. This is especially true in States located in close proximity of their AC counterparts where ranges and maneuver areas facilitate Joint Tactical Air Operations (JTAO) and Integrated Air Defense (IAD) training.

Given these considerations, the allocation of one, or both, battalions of THAAD to the Army National Guard would be both fiscally and operationally sound. Assigning THAAD to the National Guard, with minimal full-time manning, and stationing it close to its wartime AC headquarters would provide the training, supervision, and sustainment, while minimizing personal turbulence, to keep it in a high state of readiness commensurate with mission requirements.

#### **CORPS SURFACE-TO-AIR MISSILE SYSTEM (CORPSAM)**

The Corps Surface-to-Air Missile System (CORPSAM) is designed to protect maneuver forces, and other critical assets on the ground, from the threat posed by conventional fixed-wing and rotary aircraft, tactical ballistic missiles (TBM), cruise missiles (CM) unmanned aerial vehicles (UAV), and other air threats.<sup>110</sup> Based on the results of the Bottom-Up Review, CORPSAM



will not enter the demonstration/validation phase any earlier than FY 1998. Full-scale development and fielding of the system is not scheduled to take place until after the FY 2001 timeframe.<sup>111</sup>

At present CORPSAM is noticeably absent from the TAA 1999/2001 force structure. With no additional growth projected, the only force structure available for the future fielding of CORPSAM is that currently occupied by the five ARNG PIP III Hawk battalions.<sup>112</sup> Discussions with DA DCSOPS Force Development Office, indicate that several battalions of Patriot will be transferred to the Army National Guard, in place of HAWK, at a date yet to be determined, to facilitate the activation of CORPSAM in the AC force.<sup>113</sup>

In the interests of preserving the Total Force concept and based on the Army National Guard's demonstrated performance thus far with Chaparral, Roland, Hawk and other high technology weapons systems, it is imperative that CORPSAM be fielded in both the AC and in the Army National Guard. The present plan to field CORPSAM solely in the AC lacks operational justification, is less than cost effective, and violates the intent of the Total Force policy. Fielding it concurrently in both components will ensure that an adequate operational, training, and logistics base will exist to support the system through its life cycle.

#### **PATRIOT PAC-3/ERINT**

Patriot is the medium to high altitude Air Defense surface-to-air missile system that gained notoriety in the Gulf War in countering the Iraqi SCUD Ballistic Missiles (TBM) threat.

Patriot PAC-3 is an improved version of the Patriot missile, that gives the system enhanced counter-TBM capabilities and increased effectiveness against other components of the evolving threat.

The Extended Range Intercept Technology (ERINT) missile is a new hit-to-kill missile developed using new kinetic energy (KE) technology than can be fired from a Patriot launcher. The pending decision on procurement of these missiles will greatly enhance Patriot's already formidable capabilities.<sup>114</sup>

Patriot, in one or both of its improved configurations, promises to remain a mainstay of the Air Defense force for years to come. At present only one ARNG battalion is programmed for activation prior to the year 2000. TAA 2001 also fails to show any additional ARNG Patriot battalions in the force.<sup>114</sup>

Based on discussions with DA DCSOPS Force Development Office, it is probable that additional Patriot battalions will be transferred to the ARNG force structure to facilitate AC activation and fielding of CORPSAM.<sup>116</sup> While the exact number of battalions projected for future transition to the ARNG is unknown, it is anticipated that two or more additional battalions will be transferred to the ARNG ADA force structure.

With the addition of Patriot to the ARNG force, the National Guard will continue to maintain a robust capability in the Air Defense Artillery arena. To remain viable, the Patriot force

must be appropriately equipped, manned, and supported. Full-time manning and operating tempo (OPTEMPO) are areas that mandate careful attention. Resourced adequately in these arenas, Patriot will continue to provide a combat ready and cost effective capability for the Total Force.

#### **NATIONAL MISSION DEFENSE (NMD)**

Based on the results of the Bottom-Up Review, the National Missile Defense component of the Global Protection Against Limited Strikes (GPALS) Program for anti-ballistic missile defense has been reduced to a technology development program.

Fully implemented, GPALS would have provided a limited capability for the protection of the continental United States against Intercontinental Ballistic Missile (ICBM) attack as a part of the Strategic Defense Initiative (SDI). With the advent of the Clinton Administration, the SDI Program was terminated, and its functions were transferred to the Ballistic Missile Defense Organization (BMDO).<sup>117</sup> "BRILLIANT EYES" (BE), the missile attacking satellite-based early warning component of the system, will continue only as a research and technology development program. The Ground-Based Radar (GBR) program would be developed for THAAD, and existing interceptor technology efforts, including THAAD, would provide a development path to a ground-based interceptor (GBI) for NMD.<sup>118</sup>

Since the fielding of the major components of the BMD program have been delayed, National Guard participation in the program will, by necessity, be limited. While the readiness and performance of the National Guard in the strategic missile defense mission, as a part of the U.S. Army Air Defense Command of the 1950s through 1970s is recognized as an example of excellence," it does not appear that the NMD mission will be resourced for the foreseeable future.

If ever deployed, stationing NMD in National Guard states, particularly those arrayed along the border, along the coastline, or in major cities, would clearly make it an ideal candidate for RC integration. The fielding of such a system with a mix of AC and RC manning would provide a mission capable, cost-effective alternative that would be a reflection of the Total Force Policy at its finest. At present, this appears to be only a concept.

#### **AIR DEFENSE TACTICAL OPERATIONS CENTER (ADTOC)**

The Air Defense Tactical Operations Counter (ADTOC) is an objective automated command and control system that is in the process of development. It is being designed to integrate command and control functions for all-ground based Air Defense systems. The program incorporates a mobile Force Operations Capability (FOC) and an Engagement Operations Capability (EOC), with redundant subsystems for interoperability, survivability, and recuperability. Multiple means of communication will ensure

that the system is able to operate effectively in a highly complex and electronically saturated environment.<sup>120</sup>

Provision of the ADTOC to ARNG ADA Brigades and battalions, concurrent with AC fielding, is imperative. Short-term upgrades of the AN/TSQ-73 to the Version 5 configuration will facilitate transition to the ADTOC and will ensure effective command and control, as well as system interoperability, until the objective ADTOC is fielded for both components.<sup>121</sup>

#### **FORWARD AREA AIR DEFENSE (FAAD)**

If short-range modernization plans proceed as proposed, Avenger will remain the mainstay of Corps/EAC FAAD forces into the 21st century. Divisional and Separate Brigade heavy Air Defense forces would be equipped with the Roadrunner until a follow-on FAAD Line-of-Sight Forward Heavy weapons system could be developed and fielded. Light forces would be equipped with Avenger or Man-Portable Stinger Reprogrammable Microprocessor (RMP) missile systems to protect the force. The FAAD Command and Control System (FAAD C<sup>3</sup>I) and AN/TPQ-36A Ground-Based Sensor (GBS) would provide command, control, and early warning for the entire FAAD force.<sup>122</sup>

Department of the Army and National Guard Bureau must continually look to follow-on options to maintain the capability for the FAAD force to meet and defeat the evolving air threat. Block modifications to Avenger, and other improvements are on the

horizon. These improvements, if found operationally sound, must be incorporated concurrently, in both the AC and RC, to ensure a complimentary Total Force combat capability.<sup>123</sup>

### **RESOURCING STRATEGY**

Resourcing the proposed strategy requires a Total Force approach for effective implementation. This approach will necessitate mutual trust and cooperation between components, as well as a careful analysis of evolving threats and capabilities, to justify new system procurement and current system upgrades.

A possible shift of force structure from the AC to the National Guard, particularly in systems like Avenger, that are conducive to RC integration with a small percentage of full-time manning, would reduce operations and sustainment (O&S) costs.<sup>124</sup> This would leave more funding available for procurement.

THAAD system development and procurement is being funded out of Ballistic Missile Defense Organization (BMDO) funding. This funding will support system development and will resource the effective activation and fielding of the two THAAD battalions in the ADA force as projected under TAA-2001.<sup>125</sup>

CORPSAM system development is programmed for the demonstration/validation phase in FY 1998. Funding is projected to be programmed for full-scale procurement of the system sometime after FY 1998.<sup>126</sup>

Patriot PAC-3/ERINT procurement is programmed in the upcoming Program Objective Memorandums (POM). Funding for upgrades appears to be on solid ground for the foreseeable future. Funding for Patriot allocated to the Army National Guard should be provided from currently programmed resources.<sup>127</sup>

The National Missile Defense System (NMD) is currently funded only at the technology development program level, with the exception of those elements specifically related to THAAD. At present, this level of funding precludes the activation of NMD organizational elements.<sup>128</sup>

Air Defense Tactical Operations Center (ADTOC) development is ongoing. It is projected the funding for fielding will be programmed for the out-years. The same is true of funding for development and fielding of a FAAD Line-of-Sight Forward Heavy (FAAD-LOS-H) and Avenger, FAAD C<sup>3</sup>I, and Ground-Based Sensor (GBS) upgrades. It is imperative that funding requests for these and all initiatives include a requirement for concurrent AC/RC funding.<sup>129</sup>

Resourcing the Total Air Defense force is a Department of the Army responsibility. While in the past Congressional add-ons have provided critical resources to the Army National Guard not available through normal procurement channels, in the future continuing budget cuts make this option less viable. To ensure that the Total Force is fully equipped to execute its operational missions, the Department of the Army and National Guard Bureau

must work together diligently to ensure Army National Guard requirements are adequately identified and effectively resourced.

### **ALLOCATION PRIORITIES**

All organizational elements of the Air Defense Artillery force, regardless of component, should be equipped, modernized, and resourced based on their mission priority. This priority is usually reflected by a Force Alert Designator (FAD) and Department of the Army Master Priority List (DAMPL) sequence number.<sup>130</sup>

Contingency Force Pool (CFP) units should be resourced first based on force and support package. The remainder of the force should be resourced based on mission alignment and FAD and DAMPL sequence criteria. In short, all resources should be allocated on the basis of operational mission, regardless of component.<sup>131</sup>

### **SUMMARY OF LONG-RANGE STRATEGY**

To synopsize ARNG long-range strategy, the replacement of HAWK with a more modern, capable, and supportable missile system is our top priority. THAAD, CORPSAM, and Patriot PAC-3/ERINT, and most probably a combination thereof, remain viable alternatives. NMD, if ever fielded, remains a possibility for AC/RC concurrent fielding. The concurrent fielding of the ADTOC remains our second priority, with follow-on FAAD upgrades or



replacement options to Avenger, Roadrunner, and Stinger, our third priority.

As budget cuts continue to impact on the Army Air Defense force structure, a transfer of additional ADA force mix to the ARNG remains a cost-effective alternative.<sup>132</sup> To maintain the integrity of the Air Defense Artillery branch, its imperative, however, that the Active Component retain a minimum of 50 percent of the force mix. This will ensure that Air Defense Artillery continues to receive the support necessary at the highest AC levels to ensure its continued existence.

As articulated in this strategy, the ARNG supports long-term Air Defense Modernization and AC/RC concurrent fielding of all systems. In so doing, it opposes the retention of antiquated and nondeployable RC-only systems in the ADA ARNG force. Equipped as envisioned in the proposed long-range strategy, the Army National Guard Air Defense force will remain a capable, ready, and viable force as the Total Army prepares to develop the force necessary to meet the demands of the future.

## **CHAPTER VIII**

### **SUMMARY AND CONCLUSIONS**

## SUMMARY AND CONCLUSIONS

Air Defense Artillery plays a key role in the implementation of the National Security Strategy and National Military Strategy of the United States, across the operational continuum.<sup>133</sup> As demonstrated in the Persian Gulf War, Air Defense forces provide the vital capabilities necessary to shield population centers and other highly vulnerable targets in support of national political objectives, while performing its primary mission of protecting the force and critical military assets in the area of operations.<sup>134</sup>

The Army National Guard Air Defense Artillery force welcomes the opportunity to serve as a coequal partner with the Active Component in the execution of its Integrated Air Defense (IAD) and joint tactical air operations (JTAO) functions. It also looks forward to providing support to civilian law enforcement agencies in the conduct of counter-drug activities, as a part of its operations other than war role.

Numerous studies have demonstrated, and the performance of its soldiers during a myriad of joint training systems have proven, that National Guard air defenders are up to the challenge. To be fully effective, however, they must be equipped with state-of-the-art weapons systems and trained to a fine edge to meet the requirements of an ever-evolving threat. In short, the Total Force concept must be more than an abstract concept, it must be translated into action.

The current Air Defense Modernization Plan does not adequately accomplish this objective. As the Active Component modernizes, it leaves the majority of National Guard units equipped with antiquated missile systems that lack the training or support base to keep them combat ready. This lack of resourcing extends to the National Guard's contingency force units; units who may be committed to action on short notice. They have the requisite manpower but do not possess the latest equipment required to counter the threat.

The strategies proposed in this document are targeted to correct those deficiencies. They do so by espousing the concepts of resource allocation based on operational mission rather than on component, concurrent fielding of weapons systems, and the elimination of Reserve Component-only weapons systems within the Total Force community. They do so at minimal cost and, if implemented, are projected to result in a dramatic increase in operational capability.

A volatile world and an unpredictable future require the utmost in mutual trust and cooperation among components. A smaller force structure and reduced budgets require each component to perform its assigned mission in an operationally sound and cost-effective manner.

Modernized commensurate with its assigned missions and resourced minimally to meet its operational requirements, the Army National Guard can efficiently and cost-effectively meet the challenges of the future. By identifying a cohesive strategy to

facilitate this endeavor, the alternatives outlined in this document provide a roadmap for modernization and chart a progressive and steady course to the future. Given its implementation, the Army National Guard can attain its vision, while providing a mission-capable, combat-ready, and deployable force for the 21st century.

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### **ENDNOTES**

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## **APPENDIX B**

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## **APPENDIX C**

### **GLOSSARY OF ACRONYMS**

## GLOSSARY OF ACRONYMS

AC	Active Component
ADA	Air Defense Artillery
ADATS	Air Defense Anti-Tank System
ADTOC	Air Defense Tactical Operations Center
ARNG	Army National Guard
BE	Brilliant Eyes
BMDO	Ballistic Missile Defense Organization
BOS	Battlefield Operating Systems
BSFV	Bradley STINGER Fighting Vehicle
C <sup>2</sup>	Command and Control
C <sup>3</sup> 1	Command, Control, Communication, and Intelligence
C <sup>4</sup> 1	Command, Control, Communication, Computers, and Intelligence
CFP	Contingency Force Pool
CM	Cruise Missile
CONUS	Continental United States
CORPSAM	Corps Surface-to-Air Missile
CS	Combat Support
CSS	Combat Service Support
CWAR	Continuous Wave Acquisition Radar
DA	Department of the Army
DAMO-FDE	Department of the Army Modernization Air Defense Artillery Force Development Branch
DAMPL	Department of the Army Master Priority List
DCSOPS	Deputy Chief of Staff for Operations
DEM/VAL	Demonstration/Validation
DOD	Department of Defense
EAC	Echelon Above Corps
EOC	Engagement Operations Capability
ERINT	Extended Range Intercept Technology
EW	Electronic Warfare
FAAD	Forward Area Air Defense
FAAD-LOS-H	Forward Area Air Defense Light-of-Sight Heavy
FAADS	Forward Area Air Defense System
FAAR	Forward Area Alerting Radar
FAD	Force Activity Designator
FLIR	Forward Looking Infrared
FOC	Force Operations Capability
FORSCOM	Forces Command
FW	Fixed-Wing
FY	Fiscal Year
GBR	Ground Based Radar
GBS	Ground Based Sensor

GPALS	Global Protection Against Limited Strikes
HATS	HAWK Advanced Training Simulator
HAWK	Homing All the Way Killer
HIMAD	High/Medium Altitude Air Defense
HMMWV	High Mobility Multi-Wheeled Vehicle
IAD	Integrated Air Defense
ICBM	Intercontinental Ballistic Missile
ICC	Information and Coordination Central
ICOFT	Institutional Conduct of Fire Trainer
IFF	Identification Friend or Foe
JTAO	Joint Tactical Air Operations
KE	Kinetic Energy
LOS-F-H	Line-of-Sight Forward Heavy
LOS-R	Line-of-Sight Rear
LRC	Lesser Regional Conflict
LRCS	Low Radar Cross Section
LSDIS	Light and Special Division Interim Sensor
MANPADS	Man Portable Air Defense System
MRC	Major Regional Contingency
MRSR	Multi-Role Survivable Radar
NCA	National Command Authority
NDI	Non-Developmental Item
NG	National Guard
NGB	National Guard Bureau
NMD	National Missile Defense
NMS	National Military Strategy
OCE	Operational Certification Evaluations
OPTEMPO	Operational Tempo
O&S	Operating and Support
PAC-2	Patriot Anti-Tactical Missile (ATM) Capability-2
PAC-3	Patriot Advanced Capability-3
PATRIOT	Phased Array Tracking To Intercept Of Target
PIP	Product Improvement Program
PIP I	Product Improvement Program Phase I
PIP II	Product Improvement Program Phase II
PIP III	Product Improvement Program Phase III
PK	Probability Of Kill
POM	Program Objective Memorandum
P <sup>3</sup> I	Pre-Planned Product Improvement
R&D	Research and Development
RC	Reserve Component
RDA	Research, Development, and Acquisition



RDTE	Research, Development, Test, and Evaluation
RMP	Reprogrammable Microprocessor
RPV	Remotely Piloted Vehicle
RSTA	Reconnaissance, Surveillance, and Target Acquisition
RW	Rotary-Wing
SDI	Strategic Defense Initiative
SHORAD	Short Range Air Defense
SLBM	Submarine Launched Ballistic Missile
SRBM	Short Range Ballistic Missile
SUA	Stinger Under Armor
TAA	Total Army Analysis
TAAD	Theater Area Air Defense
TASM	Tactical Air-to-Surface Missiles
TBM	Tactical Ballistic Missile
TBMD	Tactical Ballistic Missile Defense
TD	Technology Demonstration
THAAD	Theater High Altitude Area Defense
TM	Tactical Missile
TMD	Theater Missile Defense
TMDI	Theater Missile Defense Initiative
TRADOC	Training and Doctrine Command
TSAD	Theater Strategic Air Defense
TSAM	Theater Surface-to-Air Missile
UAV	Unmanned Aerial Vehicle
UCOFT	Unit Conduct Of Fire Trainer
USAADASCH	United States Army Air Defense School
WMD	Weapons of Mass Destruction